



## **Recommendations for the Use of Antiretroviral Drugs in Pregnant Women with HIV Infection and Interventions to Reduce Perinatal HIV Transmission in the United States**

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## Reproductive Options for Couples When One or Both Partners are Living with HIV (Last updated December 24, 2019; last reviewed December 24, 2019)

### Panel's Recommendations

#### For Couples Who Want to Conceive When One or Both Partners are Living with HIV:

- Expert consultation is recommended to tailor guidance to couples' specific needs (AIII).
- Both partners should be screened and treated for genital tract infections before attempting to conceive (AII).
- Partners with HIV should achieve sustained viral suppression (e.g., two recorded measurements of plasma viral loads that are below the limits of detection at least 3 months apart) before attempting conception to maximize their health, prevent HIV sexual transmission (AI) and, for pregnant persons with HIV, to minimize the risk of HIV transmission to the infant (AI).
- For couples with differing HIV statuses, sexual intercourse without a condom allows for conception with effectively no risk of sexual HIV transmission to the partner without HIV when the partner with HIV is on antiretroviral therapy (ART) and has achieved sustained viral suppression (BII).
- Additional guidance may be required in the following scenarios:
  - The partner with HIV has not achieved sustained viral suppression or the partner's HIV viral suppression status is unknown,
  - There are concerns that the partner with HIV may be inconsistently adherent to ART during the periconception period, or
  - The provider needs to share additional information with the patient regarding options to prevent sexual HIV transmission during the periconception period.
- In these circumstances, providers may choose to counsel their patient about the following options:
  - Administration of antiretroviral pre-exposure prophylaxis (PrEP) to the partner without HIV is recommended to reduce the risk of sexual acquisition of HIV (AI). Timing condomless sex to coincide with ovulation (peak fertility) is an approach that can optimize the probability of conception (AIII).
  - Even within couples with differing HIV statuses who attempt conception when the partner with HIV has achieved viral suppression, some partners without HIV may still choose to take PrEP (CIII).

**Rating of Recommendations:** A = Strong; B = Moderate; C = Optional

**Rating of Evidence:** I = One or more randomized trials with clinical outcomes and/or validated laboratory endpoints; II = One or more well-designed, nonrandomized trials or observational cohort studies with long-term clinical outcomes; III = Expert opinion

The objective of this section is to provide guidance for safe conception and pregnancy while maximizing efforts to prevent HIV transmission to partners and infants. For couples who want to conceive while one or both partners are living with HIV, expert consultation is recommended so that approaches can be tailored to their specific needs.

The Centers for Disease Control and Prevention (CDC) states that people with HIV who take antiretroviral therapy (ART) as prescribed and who maintain an undetectable viral load have effectively no risk of transmitting HIV through sex.<sup>1</sup> Couples in which one or both partners are living with HIV should be counseled that once the partner(s) with HIV have initiated ART and have maintained HIV viral suppression, condomless sex to achieve conception is associated with effectively no risk of HIV sexual transmission. HIV viral suppression can be demonstrated with two recorded measurements of plasma viral loads that are below the limits of detection and that were taken at least 3 months apart.

Before attempting to conceive, both partners should be screened for genital tract infections. Treatment of such infections is important, because genital tract inflammation is associated with increased genital tract shedding of HIV.<sup>2-7</sup>

If conception does not occur within 6 months, providers should pursue a workup for infertility, including a semen analysis. HIV, and possibly the use of antiretroviral (ARV) drugs, may be associated with a higher prevalence of semen abnormalities, such as low sperm count, low motility, a higher rate of abnormal forms, and low semen volume. Early evaluation is indicated because of concerns about higher rates of infertility among people with HIV.<sup>8-13</sup> Coordination of care across multiple disciplines, including HIV primary care,

OB/GYN (specifically reproductive endocrinology and infertility), case management, and peer support, is advised. Integration of reproductive health counseling, including counseling about pregnancy desires and/or prevention, is recommended.<sup>14</sup>

### ***Couples with Differing HIV Statuses***

Before attempting conception, the partner with HIV should be on ART and should have achieved sustained viral suppression. The implications of initiating therapy before conception, the selection of ART for women trying to conceive and the need for adherence to achieve durable plasma viral loads below the limits of detection should be discussed with the couple. Consultation with an expert in HIV care **is strongly recommended**.

In two large studies that included heterosexual couples with differing HIV statuses (HPTN 052 and PARTNERS), there were no genetically linked HIV transmissions while the partner with HIV was virally suppressed. HPTN 052 was a randomized clinical trial designed to evaluate whether immediately initiating ART in people with CD4 T lymphocyte (CD4) cell counts of 350 to 550 cells/mm<sup>3</sup> could prevent sexual transmission of HIV among couples with differing HIV statuses more effectively than delaying ART. Most of the participants were from Africa (54%), with 30% from Asia and 16% from North and South America. This study showed that initiating ART earlier led to a 93% reduction in the rate of sexual transmission of HIV to the partner. During the study, 877 participants with HIV delayed initiation of ART until their CD4 cell counts fell below 250 cells/mm<sup>3</sup>, and 886 participants with HIV began ART immediately. Forty-six cases of HIV infection were genetically linked to the partner with HIV during the study; 43 of these cases occurred in couples where one partner delayed initiation of ART, and three cases occurred in couples where one partner began immediate ART. No linked infections occurred between partners when the partner with HIV had a viral load that was stably suppressed by ART. Thus, this randomized trial clearly demonstrated that providing treatment to persons living with HIV can reduce the risk of HIV transmission to their sexual partners.<sup>15</sup> In addition, the PARTNERS study—which studied 1,166 couples of differing HIV statuses (both heterosexual couples and men who have sex with men) where the partner with HIV was on suppressive ART and had sex without using a condom—reported no cases of transmission after a median follow up of 1.3 years **and approximately 58,000 condomless sex acts**.<sup>16</sup>

A prospective cohort study evaluated couples with differing HIV statuses who were planning to conceive. Among 161 couples (133 couples included a male partner living with HIV) where the partner living with HIV received suppressive ART **for at least the previous 6 months** and the couple opted for natural conception, a total of 144 natural pregnancies occurred and 107 babies were born. No cases of sexual (to partner) or vertical (to infant) transmission occurred.<sup>17</sup>

**For couples with differing HIV statuses where the partner with HIV is on ART and has achieved sustained viral suppression, sexual intercourse without a condom allows for conception with effectively no risk of sexual transmission to the partner without HIV. It is not known how frequently viral load testing should be conducted when a patient is relying on treatment and viral suppression as a prevention strategy.<sup>1</sup> There is currently not enough evidence to determine the optimal schedule for viral load testing in people with HIV who rely on this prevention strategy. Consider monitoring the viral load more frequently in these individuals than the current treatment guidelines recommend.**

Timing condomless sex to coincide with ovulation (peak fertility) can optimize the probability of conception. The use of an ovulation kit is the optimal method for identifying the most fertile time of the cycle.<sup>18</sup>

When a woman with HIV is in a relationship with a partner who does not have HIV, assisted insemination during the periovulatory period at home or in a provider's office with semen from her partner is an option for conception that eliminates the risk of HIV transmission to her partner.

When a man with HIV is in a relationship with partner without HIV, the use of donor sperm from a man without HIV is an option for conception that eliminates the risk of HIV transmission to the partner without

HIV. When a man with HIV is in a relationship with someone who does not have HIV, the use of sperm preparation techniques (e.g., “sperm washing” followed by testing the sample for HIV RNA), coupled with either intrauterine insemination or *in vitro* fertilization with intracytoplasmic sperm injection, has been reported. However, the appropriate role of semen preparation techniques in the current context is unclear, particularly given their expense and technical requirements. These sperm preparation techniques were largely developed before studies had demonstrated the efficacy of ART and pre-exposure prophylaxis (PrEP) in decreasing the risk of HIV transmission to sexual partners without HIV. Assisted reproductive technologies may be useful in cases of male infertility or couples who are using donor sperm or a surrogate parent.

In addition to reducing the risk of HIV transmission between partners, starting ART before conception in women with HIV may also further reduce the risk of perinatal transmission.<sup>19</sup> Evidence suggests that early and sustained control of HIV may decrease the risk of perinatal transmission,<sup>20,21</sup> but it does not completely eliminate the risk.<sup>21</sup> In addition, reports are mixed on the possible effects of ART on prematurity and low birthweight, with some, but not all, data suggesting that such outcomes may be more frequent among women who are on ART at conception.<sup>22-26</sup>

### ***Couples Where Both Partners are Living with HIV***

Both partners with HIV should be on ART with sustained viral suppression before attempting conception. The risk of HIV superinfection or infection with a resistant virus is negligible when both partners are on ART and have fully suppressed plasma viral loads.<sup>27</sup>

### ***Pre-Exposure Prophylaxis Provision and Monitoring in Couples with Differing HIV Statuses***

For couples with differing HIV statuses who attempt conception via sexual intercourse without a condom when the partner with HIV has not been able to achieve viral suppression or when viral suppression status is not known, administering PrEP to the partner without HIV is recommended to reduce the risk of sexual transmission of HIV. PrEP is the use of ARV medications by an individual without HIV to maintain blood and genital drug levels sufficient to prevent acquisition of HIV. Only daily dosing of a combination of tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC) is currently approved by the Food and Drug Administration for use as PrEP. **Adherence is critical** (see Appendix C). Couples should still be counseled to limit sex without a condom to the period of peak fertility.

Sun et al. reported on 91 serodiscordant couples (43 with men living with HIV and 48 with women living with HIV) in which the partner with HIV was on effective ART, the partner without HIV received PrEP (or post-exposure prophylaxis), and intercourse was timed to maximally reduce the risk of HIV transmission. There were 196 acts of intercourse without a condom, 100 natural conceptions, and 97 live births. There were no cases of HIV seroconversion in the sexual partner without HIV.<sup>28</sup>

One study followed 1,013 Kenyan and Ugandan serodifferent couples (67% of couples involved women living with HIV) who had a high risk of sexual transmission. After an integrated ART and PrEP strategy for HIV prevention was implemented, there were no HIV transmissions to male partners among these couples. Only two incident infections were observed in the women (HIV incidence of 0.2 per 100 person years). These two infections occurred in the absence of ART or PrEP.<sup>29</sup>

Many studies have demonstrated that using PrEP reduces the risk of HIV acquisition in both men and women, with minimal risk of incident ARV drug resistance. In most trials that failed to demonstrate PrEP efficacy, drug levels were very low, suggesting suboptimal levels of adherence (see Appendix C).<sup>15,30-35</sup>

Pregnancy and breastfeeding are not contraindications to PrEP.<sup>36-41</sup> There is no evidence of an increase in congenital anomalies among children born to women exposed to TDF or FTC during the first trimester.<sup>42</sup> Data from studies of infants born to mothers with HIV and exposed to TDF through breast milk suggest limited drug exposure.<sup>43-47</sup> Strategies to reduce HIV transmission (e.g., condom use, PrEP, treatment-as-prevention) should be emphasized during pregnancy, because several studies have reported increased

incidence of HIV acquisition during pregnancy, which may also lead to an increased risk of perinatal transmission.<sup>48</sup>

Among couples with differing HIV statuses who attempt conception (sexual intercourse without a condom around the time of ovulation) when the partner with HIV has achieved viral suppression, some partners without HIV may still choose to take PrEP. A modeling study analyzed the utility of PrEP under different conditions. In this analysis by Hoffman et al., PrEP provided little added benefit when the male partner was on ART and had a suppressed viral load and when the couple limited sex without a condom to the ovulation window and optimized other modifiable transmission risks.<sup>49</sup>

If clinicians elect to prescribe PrEP to couples with differing HIV statuses, couples should be educated about the potential risks and benefits and all available alternatives for safer conception. CDC has issued guidelines for the use of PrEP in sexually active heterosexual adults.<sup>50</sup> CDC recommends that an individual who does not have HIV and who is planning a pregnancy with a partner who has HIV start daily oral TDF plus FTC beginning 1 month before conception is attempted and continuing for 1 month after conception occurs.<sup>50</sup> If the couple is going to continue having condomless sex after conception and the partner with HIV has not achieved sustained viral suppression, the partner without HIV should continue to take PrEP to decrease the risk of secondary transmission.

Recommended laboratory testing should include HIV diagnostic testing at baseline and then every 3 months, renal function testing at baseline and then every 6 months, and pregnancy testing at baseline and then every 3 months. Testing for hepatitis B virus (HBV) infection should be performed before initiating PrEP. Individuals without HBV infection should be vaccinated if they have not received HBV vaccination or they lack immunity to HBV. Individuals who are taking PrEP should be educated about the symptoms that are associated with acute HIV infection and advised to contact their providers immediately for further evaluation if symptoms occur. Partners who are HIV negative should undergo frequent HIV testing to detect HIV infection quickly. If HIV infection is documented, the patient should be immediately started on an HIV treatment regimen, measures should be instituted to prevent perinatal transmission if pregnancy has occurred and attempts at conception should be stopped if pregnancy has not occurred, and the patient should be referred to an HIV specialist immediately. Individuals with chronic HBV should be monitored for possible hepatitis flares when PrEP is stopped.<sup>51</sup> Clinicians are strongly encouraged to register women who become pregnant while receiving PrEP with the [Antiretroviral Pregnancy Registry](#).

### ***Monitoring of Pregnant Women Without HIV who have Partners with HIV***

Women without HIV who present during pregnancy and indicate that their partners have HIV should, like all pregnant women, be notified that HIV screening is recommended and that they will receive an HIV test as part of the routine panel of prenatal tests unless they decline (this is the opt-out strategy; see [Maternal HIV Testing and Identification of Perinatal HIV Exposure](#)). Women who test HIV seronegative and have partners who are living with HIV should continue to be regularly counseled regarding consistent condom use to decrease their risk of sexual transmission of HIV if the partner with HIV has not achieved sustained virologic suppression. They should also be counseled on the importance of their partners' adherence to ART and the need to achieve sustained virologic suppression to reduce the risk of sexual transmission of HIV. Women should also be counseled regarding the symptoms of acute retroviral syndrome (i.e., fever, pharyngitis, rash, myalgia, arthralgia, diarrhea, and headache) and the importance of seeking medical care and testing if they experience such symptoms. Women with acute HIV infection during pregnancy or lactation are at high risk of transmitting HIV to their infants and should receive HIV testing with an HIV RNA polymerase chain reaction assay if acute HIV infection is suspected (see [Maternal HIV Testing and Identification of Perinatal HIV Exposure](#) and [Acute HIV Infection](#)).<sup>52,53</sup> Repeat HIV testing in the third trimester is recommended for pregnant women who initially test HIV negative but who are at increased risk of acquiring HIV. Women who are at increased risk include those living in a city or state that is considered a high-risk jurisdiction by CDC. More frequent testing is indicated when a woman's partner is living with HIV; these women should be tested every trimester.



## ***Monitoring of Men Without HIV Who Have Partners with HIV***

Men without HIV who are attempting pregnancy with partners who have HIV should continue to be counseled regularly on methods to prevent acquisition of HIV, including suppressive ART for his partner, PrEP, and consistent condom use. CDC recommends HIV testing every 3 months for the partner who does not have HIV while the couple is attempting to conceive without condoms. The National Perinatal HIV Hotline (888-448-8765) is a resource for a list of institutions that offer reproductive services for couples where one or both partners are living with HIV.

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